M2M 3350 GSM/GPRS Modem
User's Manual & Reference Guide

Revision 1 – June 2007

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1 INTRODUCTION

The M2M 3350 is a GSM/GPRS modem which allows you to connect to the internet anywhere there is GSM coverage. Using a SIM card you can download emails, surf the web, send/receive SMS, send faxes, and make phone calls from your PC while on the road. The M2M 3350 uses the power from your USB port so it does not require any external power supply. You can connect to the M2M 3350 using USB, RS232, and Bluetooth (Optional). The M2M 3350 is available for quad band 850/900/1800/1900Mhz networks.

2 FEATURES

- Easy to install
- Compact and robust enclosure
- Quick and easy to setup via Windows™
- Available for quad-band GSM operation (850/900/1800/1900MHz)
- USB Powered
- Send SMS or make phone calls using the dialer
- Access the web from anywhere
- Uses a standard SIM card
- USB, RS232, Bluetooth interfaces
- LEDs show complete modem status
- Hayes Modem AT command set available for API
- Detachable GSM antenna

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3 CONFIGURATION AND SETUP

This section will help you setup a connection for your M2M 3350 using Windows XP.

3.1 What you will need

To begin you will need the following:

- M2M 3350
- A PC with Windows XP and at least one USB port
- GSM antenna
- GPRS enabled SIM card with known APN settings
- USB cable
- M2M 3350 CD
- Bluetooth USB dongle (optional)
- Bluetooth Serial dongle (optional)

3.2 Getting Started

Follow the steps below to setup your M2M 3350 internet connection.

1. Insert the SIM card into the SIM Card Tray on the front of the unit
2. Connect the GSM antenna
3. Insert the M2M 3350 CD into your PC
4. Continue to section 3.3.

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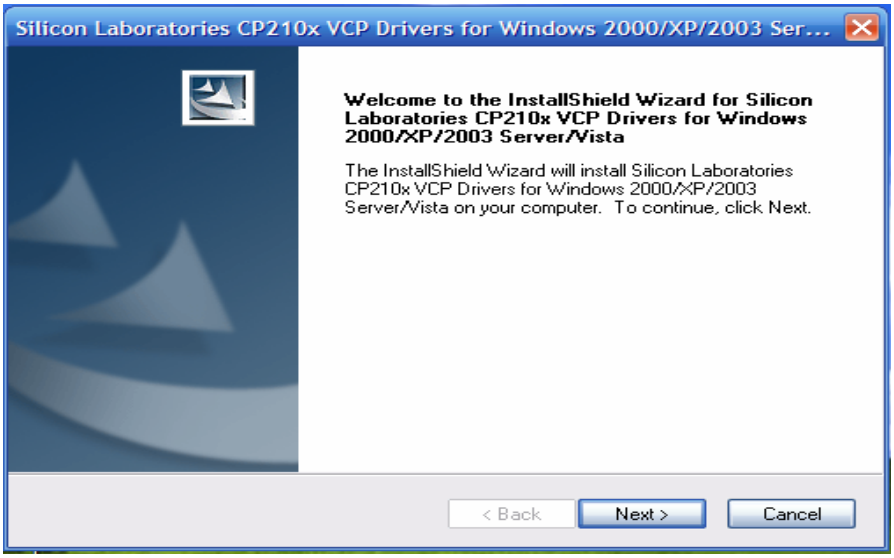
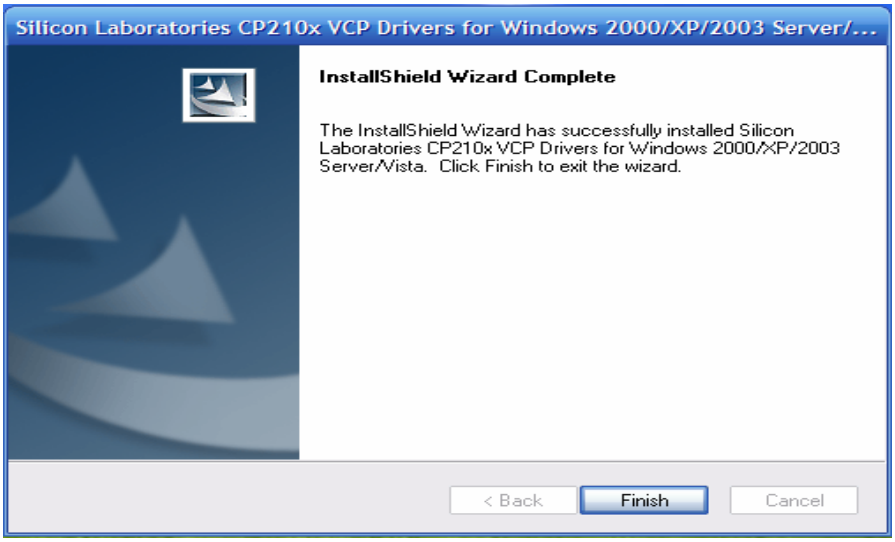
3.3 USB Driver Installation

Put the M2M 3350 CD into your computer and make sure the modem is not connected to the PC. Click 'USB Driver Install' and follow the instructions.


Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Ser...
Welcome to the InstallShield Wizard for Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista
The InstallShield Wizard will install Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista on your computer. To continue, click Next.
< Back
Next >
Cancel


Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/...
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Silicon Laboratories CP210x VCP Drivers for Windows 2000/XP/2003 Server/Vista. Click Finish to exit the wizard.
< Back
Finish
Cancel

After the pre-installation has finished, connect the M2M 3350 to your PC using the USB cable. A message should pop-up saying "Found New Hardware" and then the "Found New Hardware Wizard" will appear.

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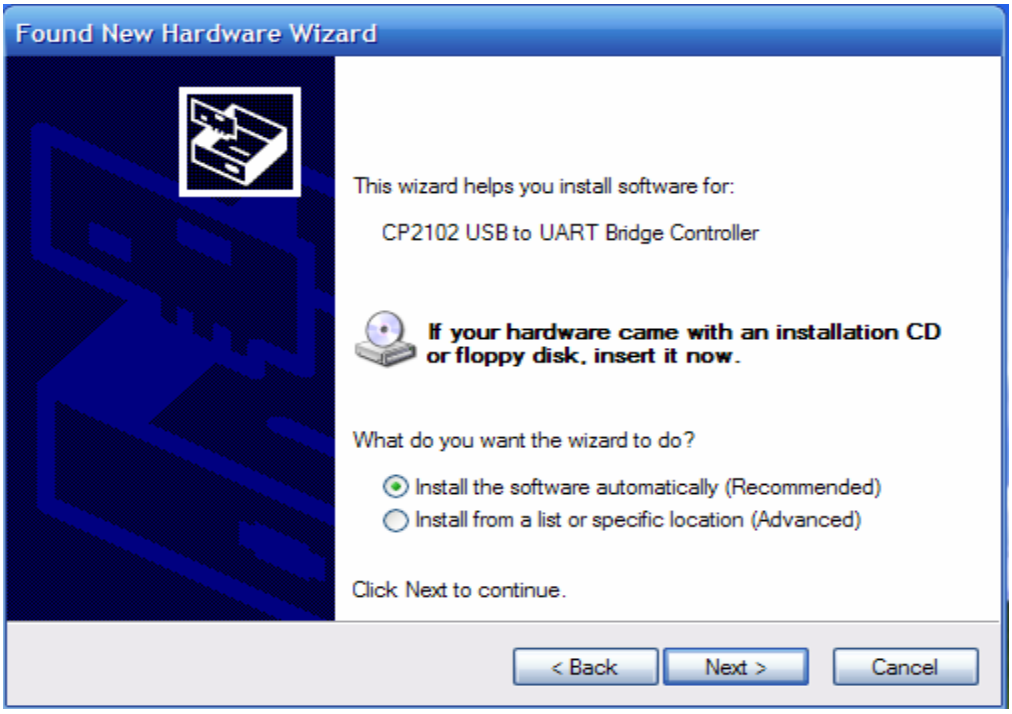
Click "yes, this time only", then click 'Next'.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

.

Click "Install the software automatically (Recommended)" and click 'Next'.


Found New Hardware Wizard
This wizard helps you install software for:
CP2102 USB to UART Bridge Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

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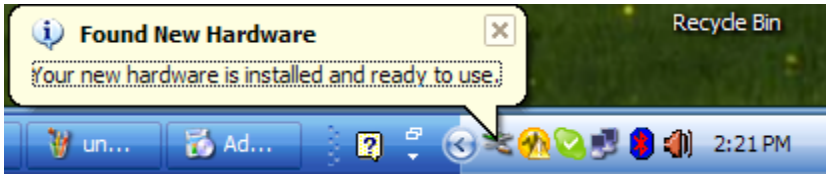
Finally, a message window will appear at the bottom of the screen: "Your new hardware is installed and ready to use".



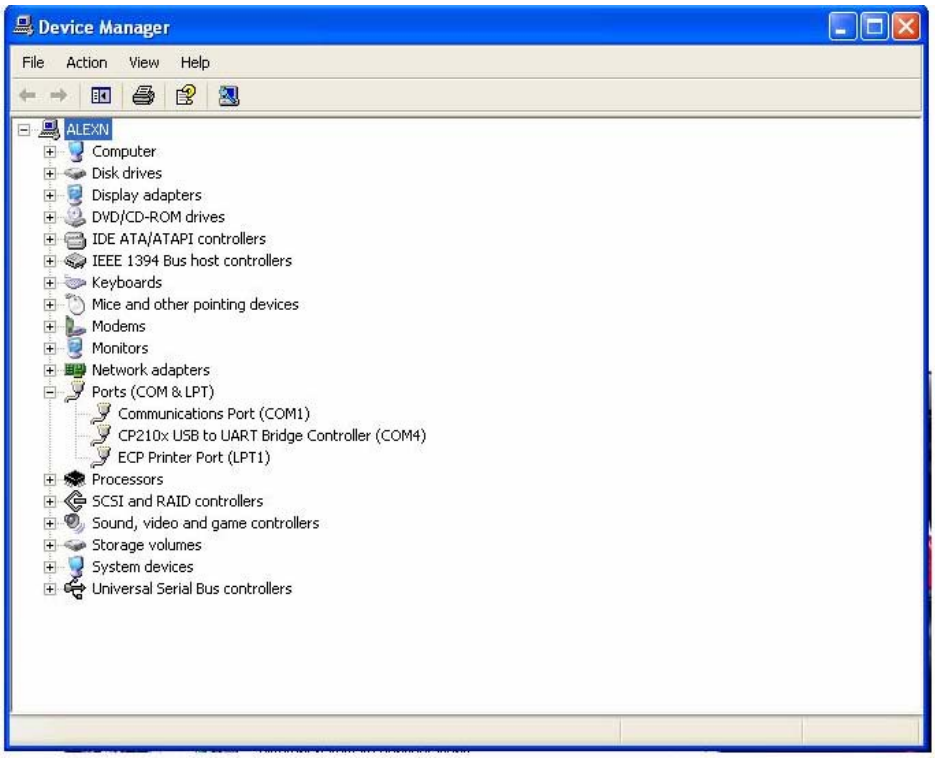
If the "Found New Hardware Wizard" appears again, follow the instructions again as above to complete the installation.

3.4 Creating a Modem Profile for the M2M 3350

If you are using the modem in USB mode, make sure the selector switch on the front of the modem is set to 'USB'. If you are using the serial or Bluetooth option, make sure the selector switch is set to 'COM'.

!!If you are using the Bluetooth option, skip to section 3.6!!

In order to know which comm. port the modem is emulating for USB we need to open *Control Panel>System>Hardware>Device Manager>Ports* and see which port the modem is using. In this case it is '*CP210x USB to UART Bridge Controller (COM 4)*' as shown below.



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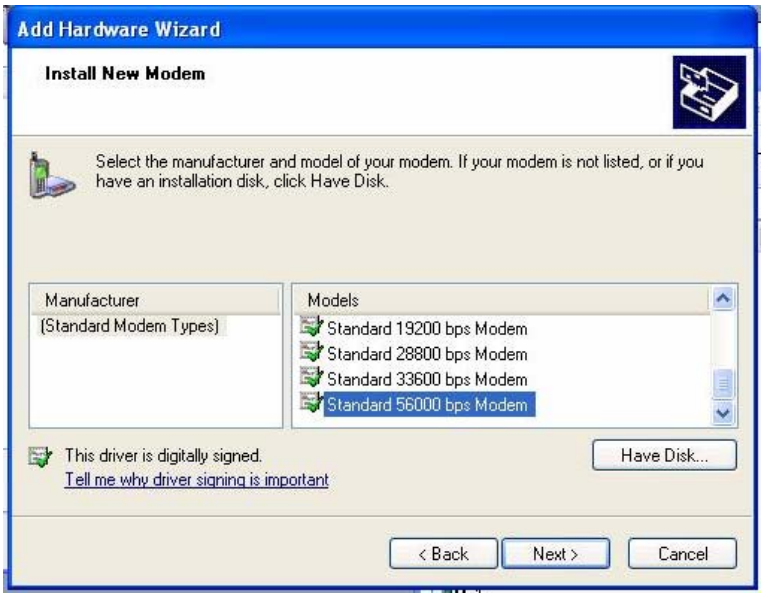
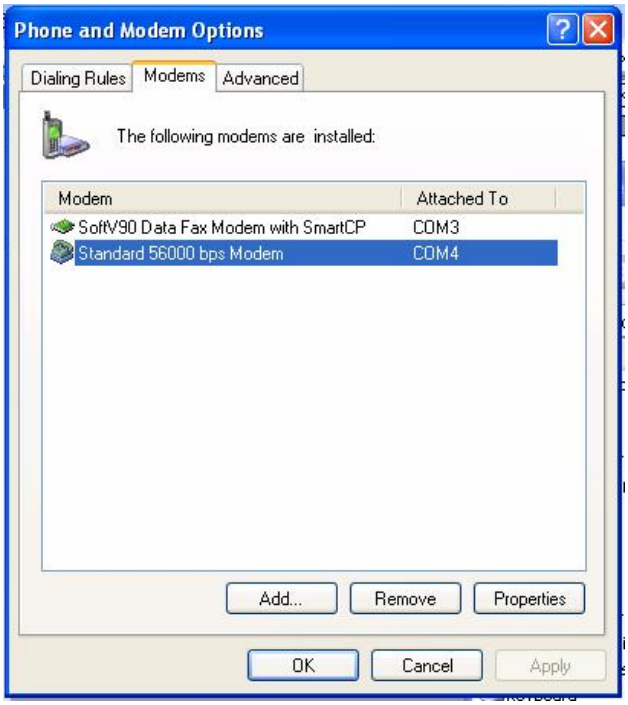
Now that we know which comm. port our modem is using we need to create a profile for the modem. To do this go to *Control Panel>Phone and Modem Options>Modems.* At the bottom of the menu screen, click "Add…" Check the 'Don't select my modem; I will select it from a list' checkbox and click "Next". Select the 'Standard 56000 bps Modem' from the list and click "Next".


Add Hardware Wizard
Install New Modem
Select the manufacturer and model of your modem. If your modem is not listed, or if you have an installation disk, click Have Disk.
Manufacturer
(Standard Modem Types)
Models
Standard 19200 bps Modem
Standard 28800 bps Modem
Standard 33600 bps Modem
Standard 56000 bps Modem
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

In the next screen select the comm. port which we had confirmed earlier and click "Next" and then "Finish". Now, under the Phone and Modem Options section of the Control Panel you should see the modem we just created on the correct comm. port.



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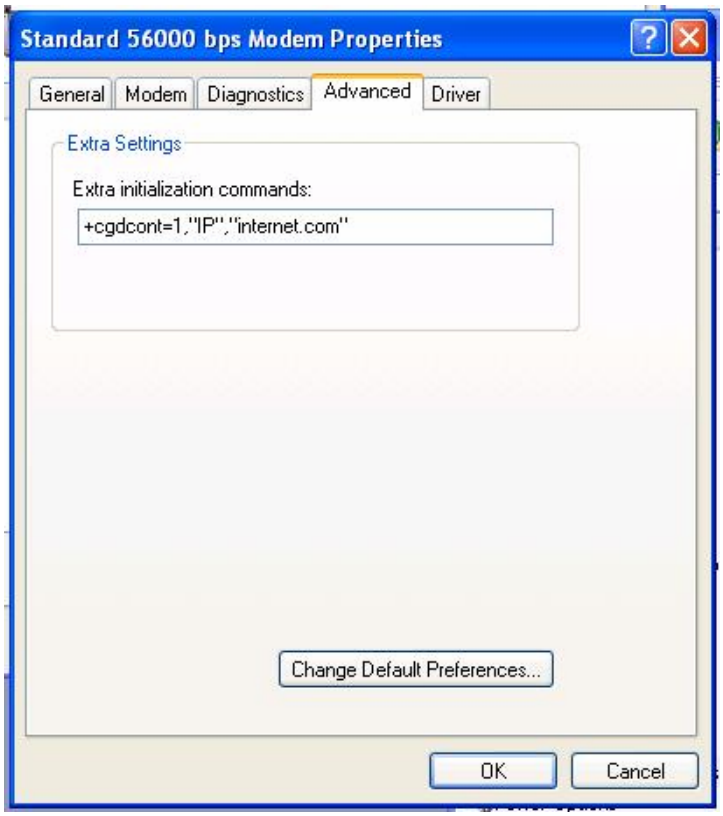
Now with the modem selected, click *Properties*>*Advanced* and enter the following string of text under Extra initialization commands **+cgdcont=1,"IP","*Carrier APN*"** where the '*Carrier APN*' is specific to the provider of your SIM card. In this example we are using the Rogers network in Canada which has the APN (Access Point Name) '*internet.com*'. If you were using Cingular in the US as another example you would use '*ISP.CINGULAR*'. You can refer to the following website for a comprehensive list of APN settings for various networks around the world http://www.laipac.com/gprs_setting.htm. Every carrier also has a *username* and *password* as listed on the webpage. These will be used later. In the case of the Rogers network they are '*wapuser1*' and '*wap*' respectively.



Now click 'OK' and move on to the next section.

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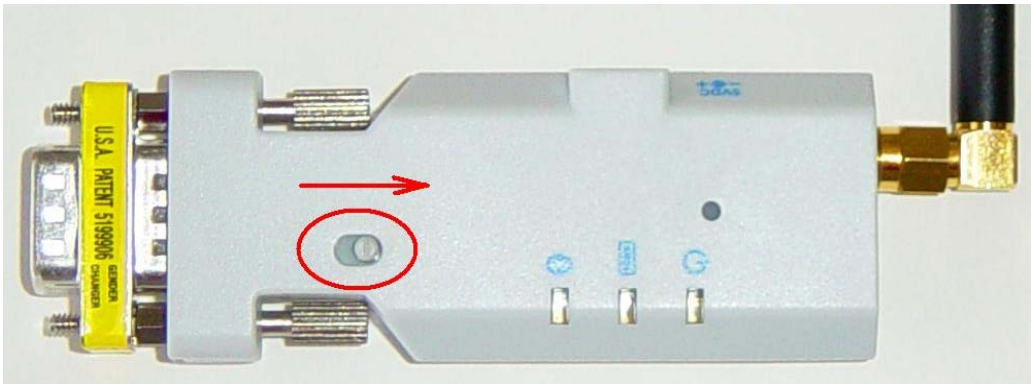
3.5 Creating the Modem Connection

If you are using the Bluetooth option, make sure the slider switch on the Serial Bluetooth Dongle is set towards the antenna and not towards the DB9 connector as shown below. Make sure the Bluetooth Serial Dongle is connected to the serial port on the M2M 3350. Note the COM port as discovered from section 3.7.



Now that we have setup the modem we can setup the internet connection. Go to *Control Panel>Network Connections>File>New Connection…* and click "Next". Select the checkbox 'Connect to the Internet' and then "Next".

New Connection Wizard
Network Connection Type
What do you want to do?
Connect to the Internet
Connect to the Internet so you can browse the Web and read email.
Connect to the network at my workplace
Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.
Set up a home or small office network
Connect to an existing home or small office network or set up a new one.
Set up an advanced connection
Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.
< Back
Next >
Cancel

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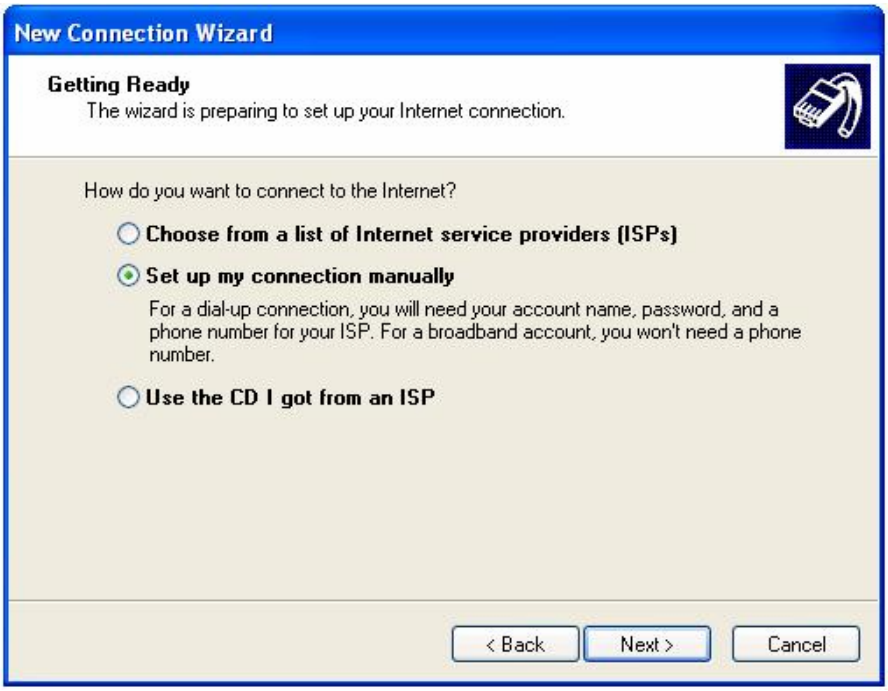
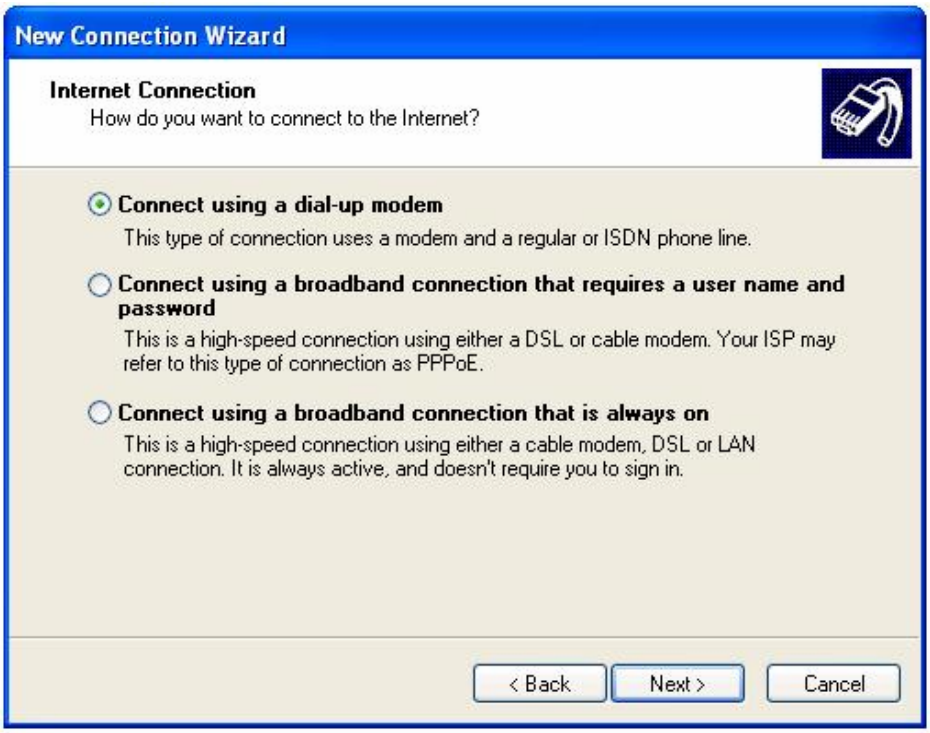
In the next screen select 'Setup my connection manually' and click "Next".


New Connection Wizard
Getting Ready
The wizard is preparing to set up your Internet connection.
How do you want to connect to the Internet?
Choose from a list of Internet service providers (ISPs)
Set up my connection manually
For a dial-up connection, you will need your account name, password, and a phone number for your ISP. For a broadband account, you won't need a phone number.
Use the CD I got from an ISP
< Back
Next >
Cancel

Now select 'Connect using a dial-up modem' and click "Next".


New Connection Wizard
Internet Connection
How do you want to connect to the Internet?
Connect using a dial-up modem
This type of connection uses a modem and a regular or ISDN phone line.
Connect using a broadband connection that requires a user name and password
This is a high-speed connection using either a DSL or cable modem. Your ISP may refer to this type of connection as PPPoE.
Connect using a broadband connection that is always on
This is a high-speed connection using either a cable modem, DSL or LAN connection. It is always active, and doesn't require you to sign in.
< Back
Next >
Cancel

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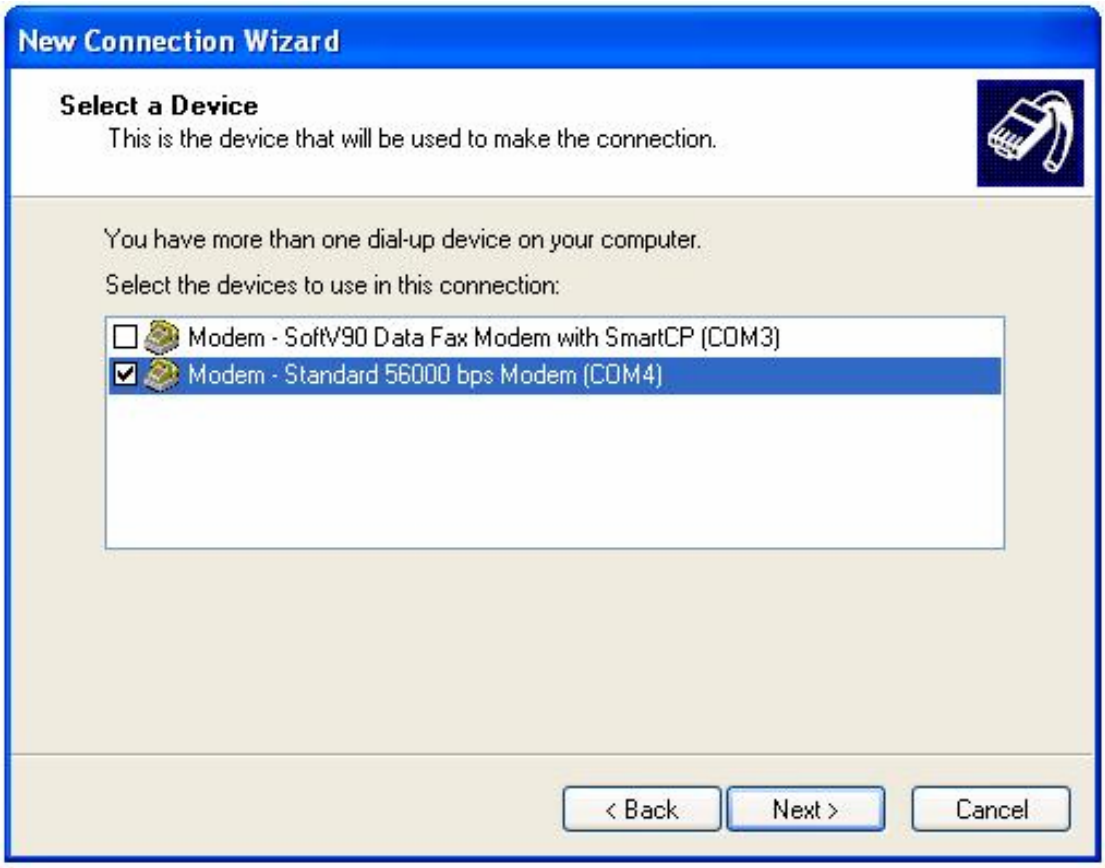
In the next screen select the modem we had previously created and click "Next".


New Connection Wizard
Select a Device
This is the device that will be used to make the connection.
You have more than one dial-up device on your computer.
Select the devices to use in this connection:
Modem - SoftV90 Data Fax Modem with SmartCP (COM3)
Modem - Standard 56000 bps Modem (COM4)
< Back
Next >
Cancel

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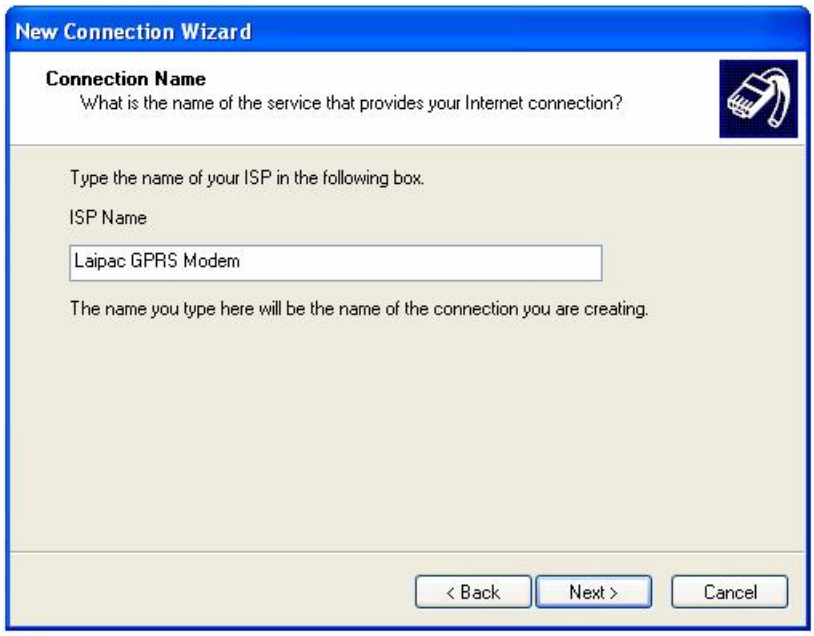
You can enter a name for this connection and click "Next".


New Connection Wizard
Connection Name
What is the name of the service that provides your Internet connection?
Type the name of your ISP in the following box.
ISP Name
Laipac GPRS Modem
The name you type here will be the name of the connection you are creating.
< Back
Next >
Cancel

In the next screen you must enter the GPRS Dial Number. You can enter '*99***1#' as this is the most common dial number. If this is not the correct dial number for your carrier you will have to check with them directly. It may also be '*99#'.

New Connection Wizard
Phone Number to Dial
What is your ISP's phone number?
Type the phone number below.
Phone number:
*99***1#
You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.
< Back
Next >
Cancel

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Now you can enter the APN Username and Password from the aforementioned website. In the case of the Rogers network in Canada it is once again '*wapuser1*' and '*wap*'. Once again refer to our webpage to look up your specific APN information. As an example for Cingular in the US, the Username would be '*ISP@CINGULARGPRS.COM*' and the password is '*CINGULAR1*'.

New Connection Wizard
Internet Account Information
You will need an account name and password to sign in to your Internet account.
Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)
User name:
wapuser1
Password:
Confirm password:
Use this account name and password when anyone connects to the Internet from this computer
Make this the default Internet connection
< Back
Next >
Cancel

Now click "Next" and then "Finish". Make sure you don't have another internet connection running and then click "Dial".

DONE!

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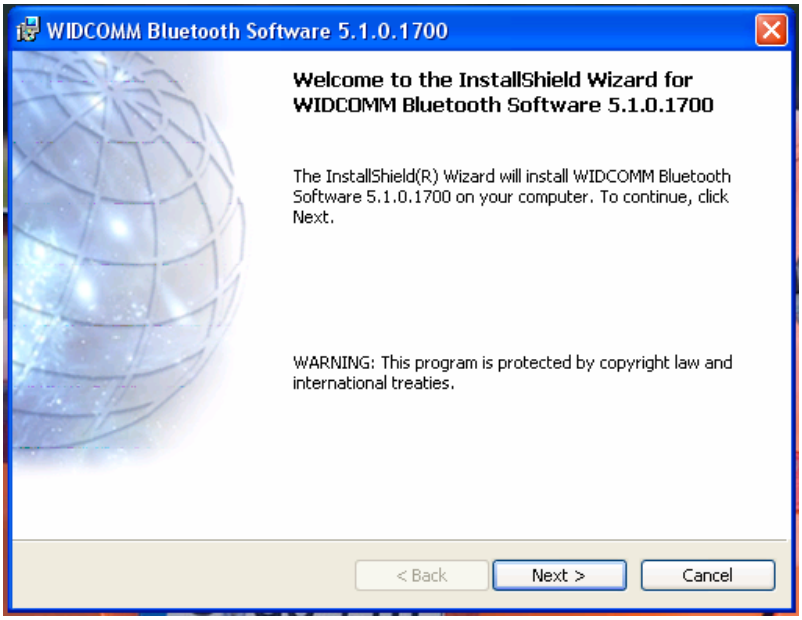
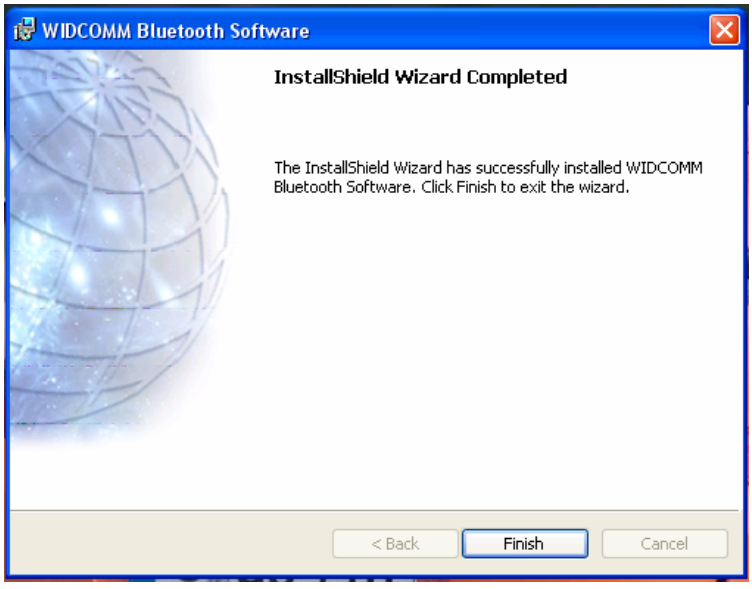
3.6 Bluetooth USB Dongle Driver Installation (Optional)

If your PC is already equipped with Bluetooth or you already have a Bluetooth dongle installed, skip the USB Bluetooth Dongle Driver Installation and jump to section 3.7. If you are using the supplied Bluetooth dongle, continue…

To begin the installation, insert the USB driver CD that came with the Bluetooth USB dongle into your CD drive. Follow the on-screen instructions in order to install the driver. Do not plug in the Bluetooth dongle until it prompts you.


WIDCOMM Bluetooth Software 5.1.0.1700
Welcome to the InstallShield Wizard for WIDCOMM Bluetooth Software 5.1.0.1700
The InstallShield(R) Wizard will install WIDCOMM Bluetooth Software 5.1.0.1700 on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

Let all the drivers install automatically. When it is done click 'Finish' to complete the installation.


WIDCOMM Bluetooth Software
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed WIDCOMM Bluetooth Software. Click Finish to exit the wizard.
< Back
Finish
Cancel

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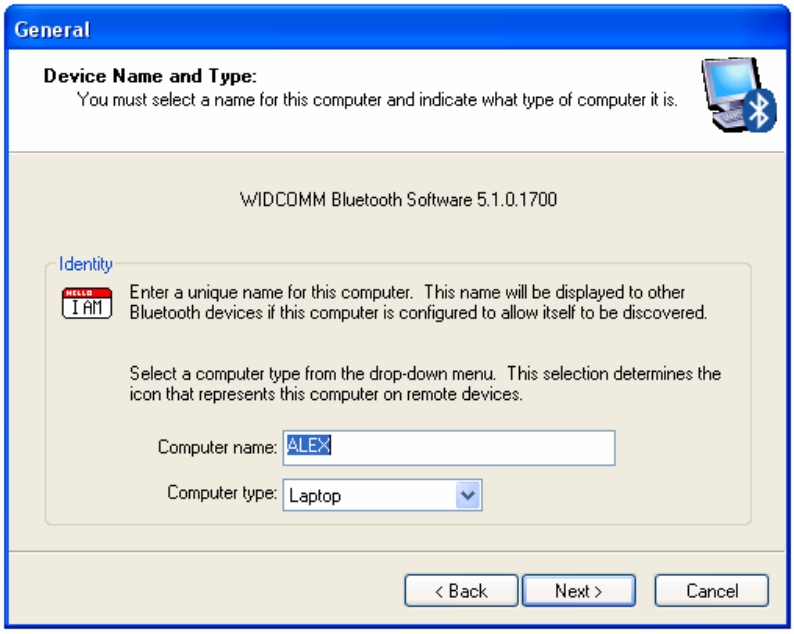
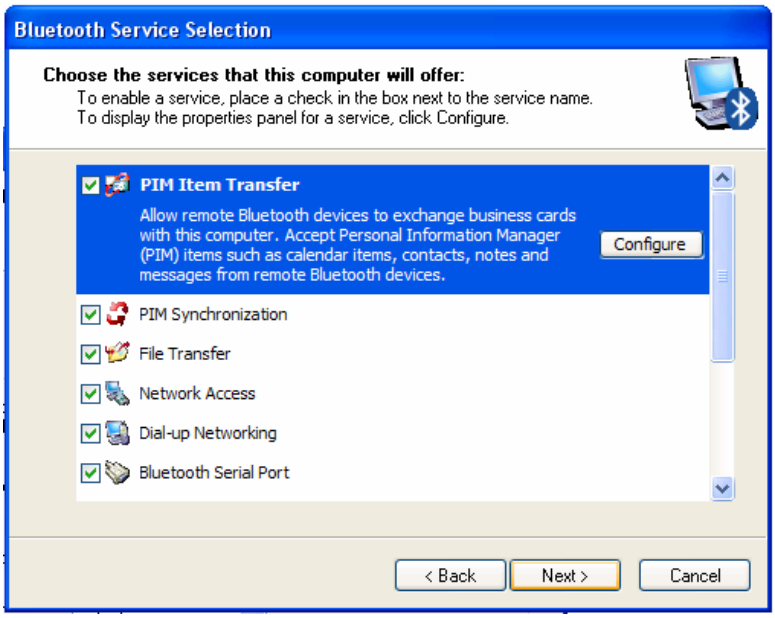
3.7 Pairing your Bluetooth Devices (Optional)

Once the drivers are installed, you may continue with the setup. Press 'Next' to continue installing the other components and pair your existing Bluetooth device with the M2M 3350 Serial Bluetooth Dongle.


General
Device Name and Type:
You must select a name for this computer and indicate what type of computer it is.
WIDCOMM Bluetooth Software 5.1.0.1700
Identity
Enter a unique name for this computer. This name will be displayed to other Bluetooth devices if this computer is configured to allow itself to be discovered.
Select a computer type from the drop-down menu. This selection determines the icon that represents this computer on remote devices.
Computer name: ALEX
Computer type: Laptop
< Back
Next >
Cancel

Be sure to install all of the components. All should be selected by default. Press 'Next'.


Bluetooth Service Selection
Choose the services that this computer will offer:
To enable a service, place a check in the box next to the service name.
To display the properties panel for a service, click Configure.
PIM Item Transfer
Allow remote Bluetooth devices to exchange business cards with this computer. Accept Personal Information Manager (PIM) items such as calendar items, contacts, notes and messages from remote Bluetooth devices.
Configure
PIM Synchronization
File Transfer
Network Access
Dial-up Networking
Bluetooth Serial Port
< Back
Next >
Cancel

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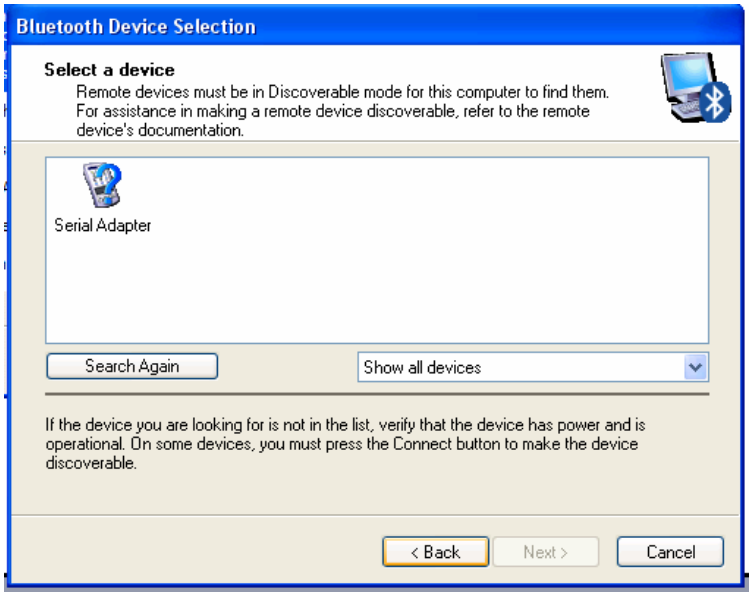
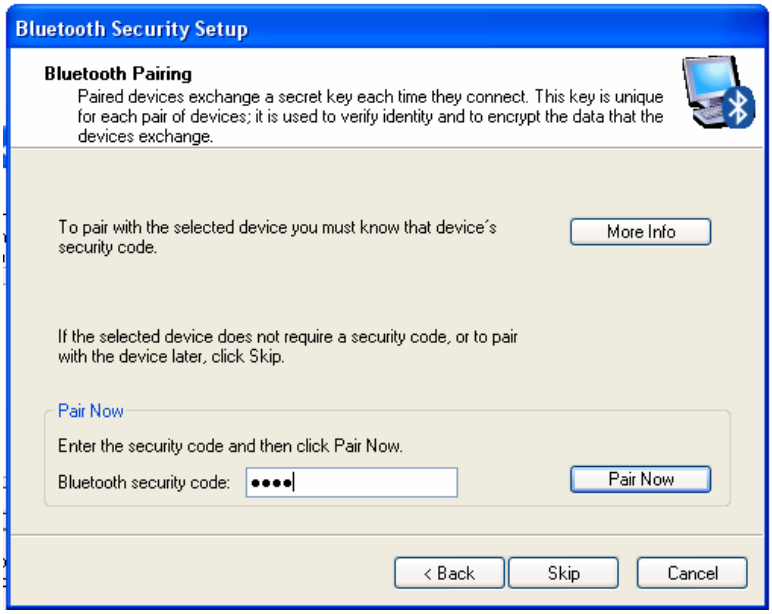
Once the Bluetooth dongle has been setup you can search for devices. With the Bluetooth USB dongle plugged in, connect the RS232 Bluetooth module to your M2M 3350 serial port and power on both units. Make sure the selector switch on the Serial Bluetooth dongle is set to 'Port' and not 'Adapter'. The blue LED should come on when powered. Also make sure you have a SIM card inserted into the modem. Now you can search for the device as shown below and connect to it.


Bluetooth Device Selection
Select a device
Remote devices must be in Discoverable mode for this computer to find them. For assistance in making a remote device discoverable, refer to the remote device's documentation.
Serial Adapter
Search Again
Show all devices
If the device you are looking for is not in the list, verify that the device has power and is operational. On some devices, you must press the Connect button to make the device discoverable.
< Back
Next >
Cancel

When you are asked for the security code, enter '**1234**'. In some cases the security code may also be '**0000**'. Click 'Pair Now'.


Bluetooth Security Setup
Bluetooth Pairing
Paired devices exchange a secret key each time they connect. This key is unique for each pair of devices; it is used to verify identity and to encrypt the data that the devices exchange.
To pair with the selected device you must know that device's security code.
More Info
If the selected device does not require a security code, or to pair with the device later, click Skip.
Pair Now
Enter the security code and then click Pair Now.
Bluetooth security code:
Pair Now
< Back
Skip
Cancel

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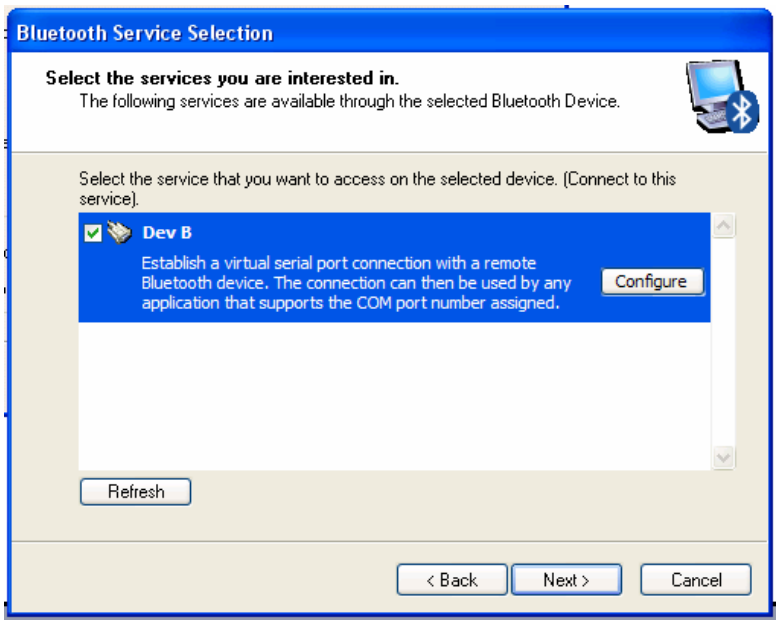
Now we want to create a virtual comm. port through the RS232 Bluetooth module. Select the device as shown below and click 'Next'.


Bluetooth Service Selection
Select the services you are interested in.
The following services are available through the selected Bluetooth Device.
Select the service that you want to access on the selected device. (Connect to this service).
Dev B
Establish a virtual serial port connection with a remote Bluetooth device. The connection can then be used by any application that supports the COM port number assigned.
Configure
Refresh
< Back
Next >
Cancel

Click 'Finish' to complete the virtual comm. port setup.

Bluetooth Setup Wizard Completion Page
Completing Bluetooth Setup Wizard
Serial Adapter Dev B
Connect to the remote device using this connection shortcut.
Create a shortcut and then restart this wizard so that I can create additional shortcuts.
To complete this connection, click Finish.
< Back
Finish
Cancel

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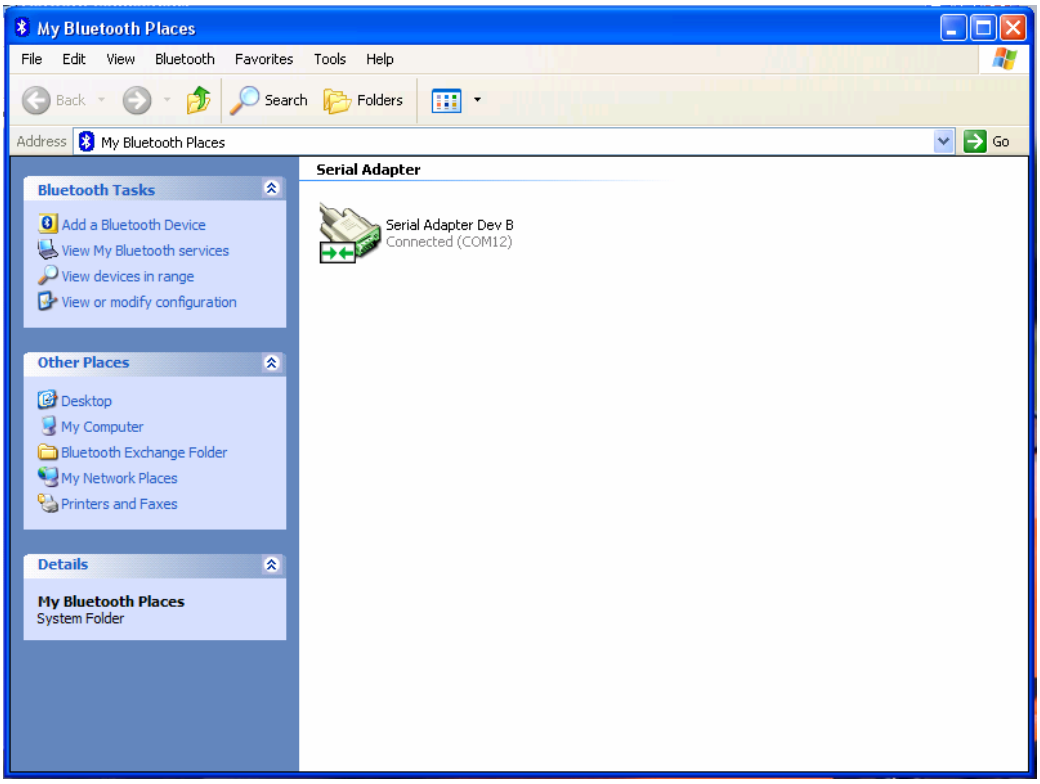
If you open the 'My Bluetooth Places' folder you can see which comm. port your modem is now using. In this case it is COM 12.



You may now continue with the setup of your modem by returning to sections 3.4 and 3.5. Make sure to use the COM port created by your Bluetooth dongle (Serial Adapter Dev B) and not the COM port being used by the USB. In this example you would use COM 12 (above) instead of COM 4 as shown in section 3.4.

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4 SIM CARD RECOMMENDATIONS

If you will be using the M2M 3350 primarily for data transferring such as surfing the internet or downloading email it is best to have a large or unlimited GPRS data plan. If not, you may be charged for data over usage at a much higher rate. If you plan on sending/receiving SMS text messages you will also need to have an SMS plan. If you plan on using the voice and calling features you will need a voice plan with minutes. Not all of these things are needed if you are not using them. The most important thing is the data plan on the SIM card. It is not recommended to use the SIM card from your mobile phone to surf the internet as most standard SIM cards do not have much data allowed per month. You may quickly use more than your standard SIM allows. Having a SIM card to use specifically for the M2M 3350 is highly recommended. Check with your GSM provider for details on their data plans.

5 HARDWARE DETAILS

5.1 GSM Modem Specifications

Standard	GSM 850/900MHz Class 4 (2W) and GSM 1800/1900 Class 1 (1W)
Interface	Serial Interface RS232 and USB with optional Bluetooth Serial Dongle
SMS	Mobile Originated (MO) and Mobile Terminated (MT) in accordance with GSM 07.05
Data	Asynchronous 2400, 4800, 9600, 14400 bps
Fax	2400/4800/7200/9600 bps. Class 2 Group 3 Compatible.
GPRS	Class 10
Audio	2.5mm Stereo jack for mono speaker and mic. Single ended.

- Designed for M2M and automotive applications
- R&TTE, GCF-CC, EMC, Safety and Chinese approved

5.2 GSM Antenna Specifications

Bands	850/900/1800/1900 MHz
Frequency Range	824~960 MHz // 1710~1990 MHz
Impedance	50 Ohm
VSWR	≤3.5
Gain	0 dBi
Radiation	Near Omni in the Horizontal Plane
Polarization	Vertical

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5.3 Physical Characteristics

Size	95x60x25mm (excluding connectors)
Overall Size	110x60x25mm
Weight	120g
Housing	Aluminium Profiled

5.4 Temperature Range

Operating Conditions: From -22°C to +55°C

Storage Conditions : From -25°C to +70°C

5.5 Power Supply

Input Power: 5V

Ground : 0V

Correct operation of the modem is not guaranteed if the input voltage drops below 5V

Parameters	GSM 850/900	GSM 1800/1900	Unit
Power Supply @ 25°C			
Input Supply Voltage	5	5	V
Input Peak Supply Current	1.8	1.1	A
Input Average Supply Current	330	220	mA
Input Average Supply Current in Idle Mode	32	32	mA

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5.6 DB9 RS232 and USB Connector Pinout

	Pin	EIA	Designation
RS232	1	DCD	Data Carrier Detect
	2	RXD	Receive Data
	3	TXD	Transmit Data
	4	DTR	Data Terminal Ready
	5	GND	Ground
	6	DSR	Data Set Ready
	7	RTS	Request to Send
	8	CTS	Clear to Send
	9	VCC	+5V
USB	1	VCC	+5V
	2	Data (-)	Data (-)
	3	Data (+)	Data (+)
	4	GND	Ground

Note: The pins are marked on each connector in fine print

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6 OPERATION

Every time you use the M2M 3350 you should make sure that all other internet connections are disabled. You will most likely need to connect to the modem before each use if you often disconnect it from the PC. The typical bandwidth is 30-40kbps, similar to a dial-up 56kbps modem.

6.1 LED Operation

The following defines the states of the LEDs on the front of the unit.

LED	Flashing/Off	Steady
PWR	No Power (off)	Power On
GSM	Registered to Network	Not Registered to Network
COM	In USB Mode (off)	In Serial Mode

Note: A flashing GSM LED does not necessarily mean the unit is connected to GPRS but only means the unit has registered with the GSM network.

6.2 SIM Card Tray

The SIM card must be placed in the SIM card tray. To eject the tray, press the yellow button with a pen. The tray should insert easily into the holder. If it must be forced, it is not in right and you should retry.

6.3 USB/COM Switch

To use the modem in USB mode, the selector switch must be set to 'USB'. The COM LED will be turned off when in USB mode. To use the modem in serial mode or with the Bluetooth dongle the selector switch must be set to 'COM'. The COM LED will be steady on yellow. In either case, the USB cable must be connected to either a USB port or another power source as this is the main power input.

6.3 Power

The USB port provides power to the modem. This must be connected to a USB port or the car adapter. The input is 5V DC and the current rating must be >500mA.

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6.5 Headphone Jack

The modem is equipped with a 2.5mm stereo headphone jack so that you can connect a speaker/microphone one-piece headset. Not all headsets work as every manufacturer uses a different pinout. We have tried to select a general pinout to be compatible with most headsets. Keep in mind that you can't transmit voice calls through the USB or RS232 connector. If you wish to make a call, you must connect the headphone jack to the modem and not to your PC.

7 COMMANDS

Note: the following commands can be entered using HyperTerminal in Windows with the settings 115200, 8, None, 1, None

Description	AT Command	Module	Comments
Module Synchro Checking	AT+CREG?	CREG=<mode>, 1	Modem Synchronized on the network
		CREG=<mode>, 2	Sync lost, re-sync attempt
		CREG=<mode>, 0	Modem not synchronized on network, no synch attempt
Receiving an Incoming Call		RING	
	ATA		Answer the call
		OK	
Initiate a Call	ATD 1234;		Don't forget the <;> at the end for VOICE call
		OK	Communication established
		CME ERROR: 11	PIN code not entered
		CME ERROR: 3	AOC credit exceeded or communication already established
Initiate an Emergency Call	ATD 911;		Don't forget the <;> at the end for VOICE call
		OK	
Communication Loss		NO CARRIER	
Hang Up	ATH		
		OK	
Enter PIN Code	AT+CPIN=1234		
		OK	
		CME ERROR: 16	Incorrect PIN code
		CME ERROR: 3	PIN already entered
Store Parameters In E2P	AT&W		
		OK	The configuration settings are stored into E2P

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8 TROUBLESHOOTING

If you are having trouble connecting to the internet or pairing your modem with your PC, try some of the following steps:

- If the Bluetooth dongle is not connecting to your PC, try unpairing and then pairing your device with the PC
- Make sure you enter the correct security code as either '0000' or '1234'
- Restart the PC and modem
- Make sure the USB/COM selector switch is set to the desired operation as either 'USB' for USB communications or 'COM' for serial/Bluetooth communication
- Make sure the slider switch on the Serial Bluetooth Dongle is set towards the GSM antenna and not set towards the RS232 connector as shown in section 3.5.
- Make sure you can the correct COM port listed when you created the modem in Windows
- Make sure you SIM card is activated
- Make sure you are using the correct APN settings from your GSM provider

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